



How to access the BioNet Web Service using Excel Power Query

A BioNet quick guide

Department of Climate Change,
Energy, the Environment and Water



Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

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How to Access the BioNet Web Service using Power Query

This document provides a quick guide on how to extract data from the BioNet Web Service using Excel with Power Query. It is intended to get you started and does not provide exhaustive guidance on using Power Query. Additional Information on using Power Query is available at: [Microsoft Power Query resources](#).

Who is this guide for?

This guide is intended for users who need to construct customised queries of data held in BioNet Atlas and BioNet Vegetation Classification.

1. Before you begin

The Power Query experience is available in all Excel 2016 or later Windows stand-alone versions and Microsoft 365 subscription plans on the **Data tab** in the **Get & Transform** group.

Before you start, ensure that you are using one of the [supported versions of Excel](#).

Data from BioNet Atlas and BioNet Vegetation Classification have been compiled into entity sets which are defined by the following data standards:

- Species Sighting Data Standard
- Flora Survey Data Standard
- Vegetation Classification Data Standard
- NSW Landscapes Data Standard
- Threatened Biodiversity Data Standard
- Species Names Data Standard
- Thesaurus Data Standard

Access the data standards on the [BioNet web services page](#).

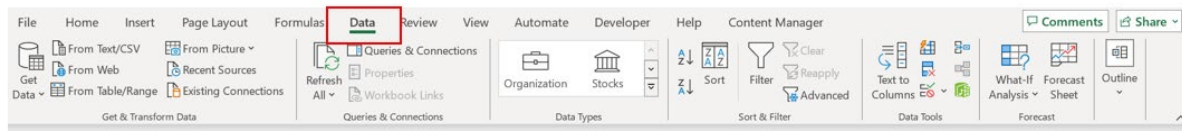
You accept the [Terms and conditions of use](#) when extracting data via the BioNet Web Service.



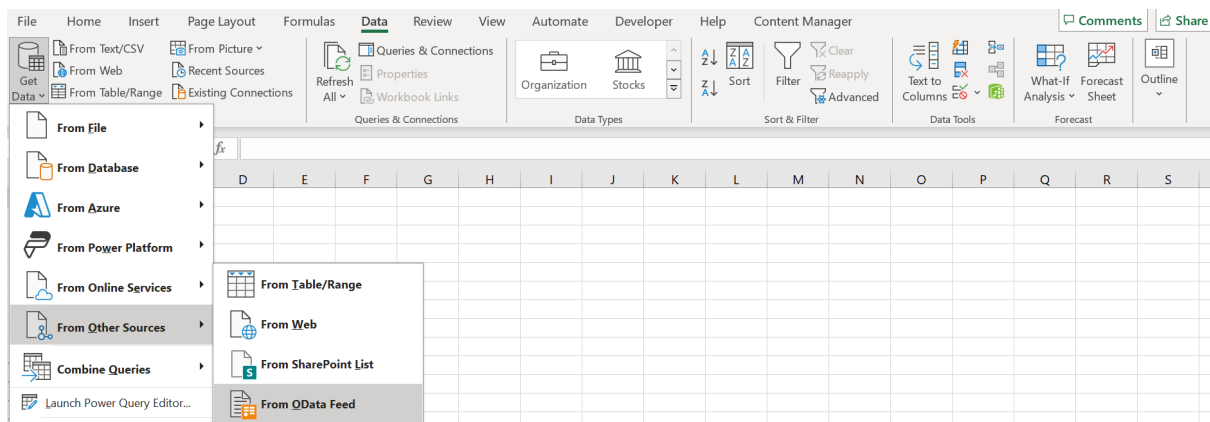
If you see a box like this, it contains important information to stop problems or errors occurring. Make sure you read box information and read the whole document before you start.

2. Connect to the BioNet Web Service using basic authentication

Step 1: Open the Data tab in Excel.



Step 2: In the 'Get Data' section of the Data ribbon, select 'From Other Sources' and click on 'From OData Feed'.



Step 3: In the OData Feed URL dialogue box enter <https://data.bionet.nsw.gov.au/biosvcapp/odata> and click 'OK'.



Step 4: The first time you connect to the service a window will appear asking how you would like to access the data.

For registered users of BioNet Atlas, select the Basic option, enter the User name and Password associated with your account, and click '**Connect**'.

Your subsequent queries will return data at the level determined by your BioNet Atlas account credentials.

The 'OData feed' dialog box is shown with a dark green sidebar on the left containing five options: 'Anonymous', 'Windows', 'Basic', 'Web API', and 'Organizational account'. The 'Basic' option is highlighted in light green. The main area of the dialog has a white background and contains the following elements:

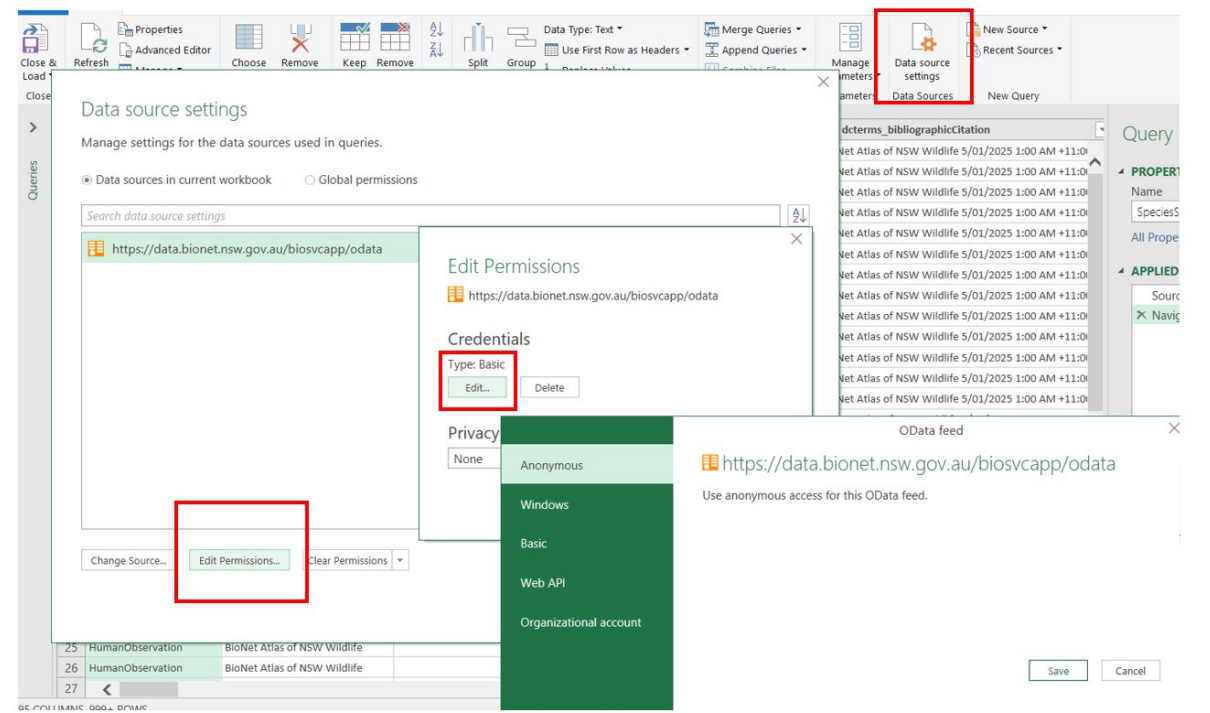
- A URL icon followed by the text: `https://data.bionet.nsw.gov.au/biosvcapp/odata`
- A 'User name' label above an empty text input field.
- A 'Password' label above an empty password input field.
- A label 'Select which level to apply these settings to' above a dropdown menu.
- The dropdown menu is open, showing the selected option: `https://data.bionet.nsw.gov.au/`.
- At the bottom, there are three buttons: 'Back', 'Connect', and 'Cancel'.

If you are not a registered user of BioNet Atlas, you can access the public level data by selecting Anonymous and clicking '**Connect**'.

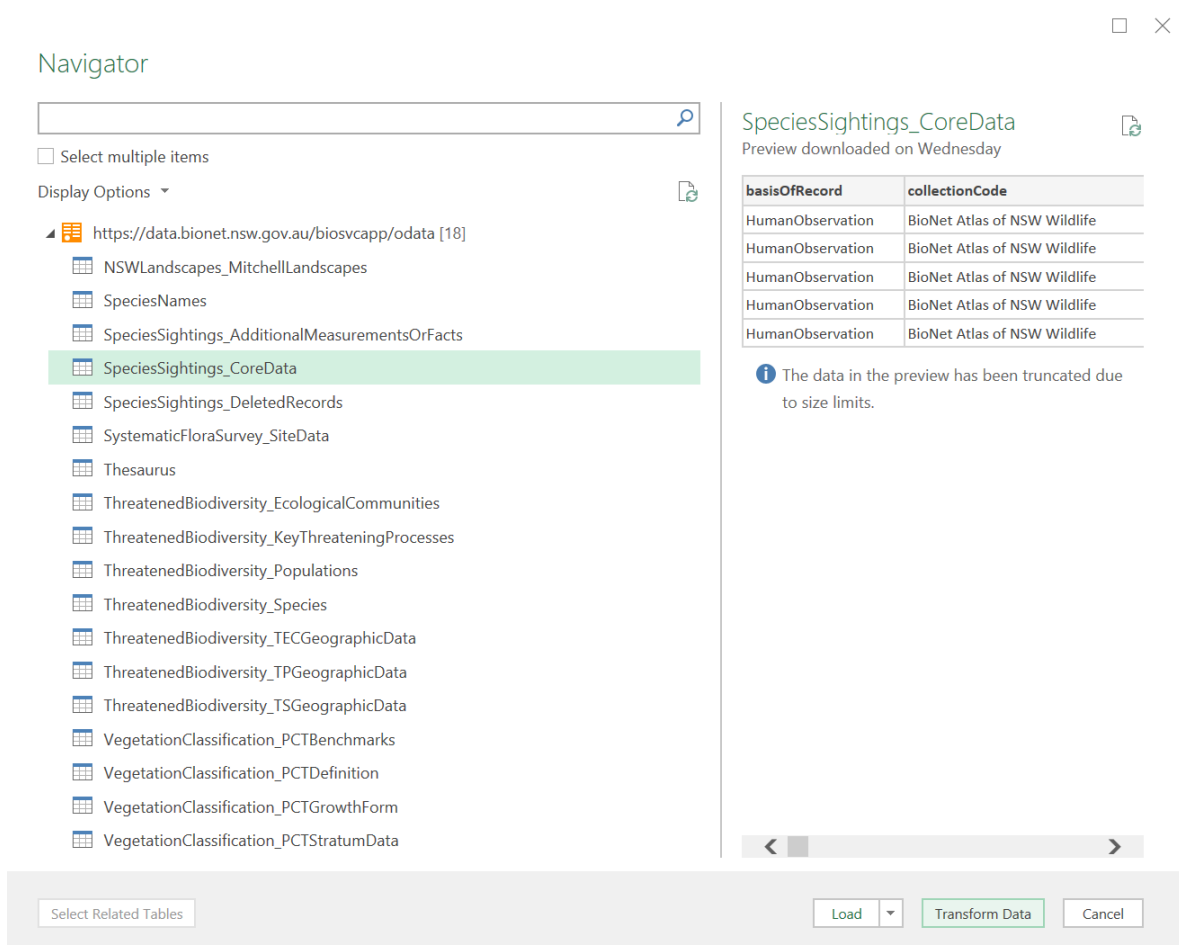
The 'OData feed' dialog box is shown with the same dark green sidebar. In this screenshot, the 'Anonymous' option is highlighted in light green. The main area of the dialog has a white background and contains the following elements:

- The same URL icon and text: `https://data.bionet.nsw.gov.au/biosvcapp/odata`.
- The text 'Use anonymous access for this OData feed.' below the URL.
- The same 'Select which level to apply these settings to' label and dropdown menu, which still shows the selected option: `https://data.bionet.nsw.gov.au/`.
- The same three buttons at the bottom: 'Back', 'Connect', and 'Cancel'.

All subsequent queries will be configured against these credential settings. If at any stage you wish to change which credentials you have provided to access the BioNet Web Service, you can do so from the Query Builder Editor (Step 6) by selecting Data Source Settings > Edit Permissions > Edit and updating your credentials.



Step 5: Select the entity set (data table) that you want to access and click 'Transform Data'.





If you click 'Load' at this stage, Power Query will try to extract all records to Excel and if the record count in the selected entity set exceeds the Excel row limit the query will fail.

Step 6: You will now see the Power Query Editor window and be able to create your query. See Section 3 of this guide for help on creating a simple query.

15 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED ON WEDNESDAY

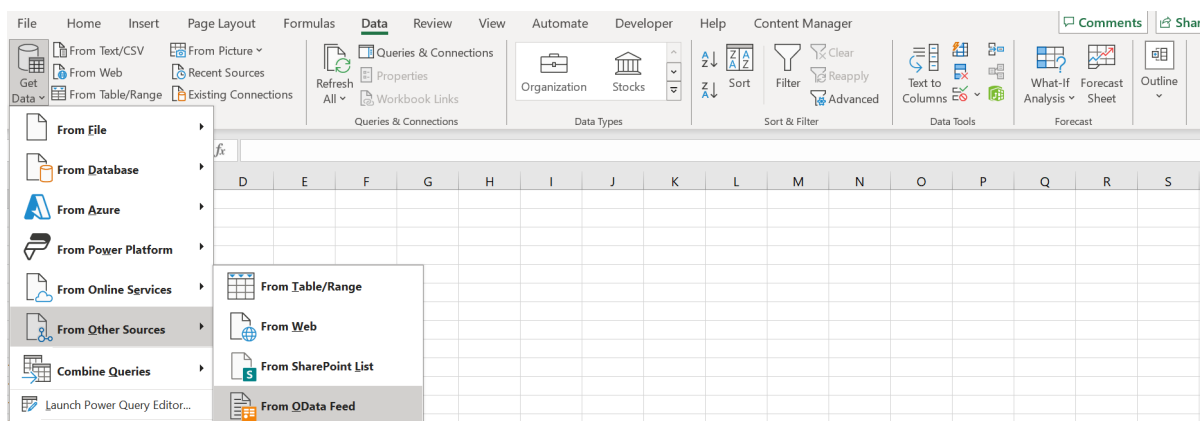
3. Connect to the BioNet Web Service using API token authentication

Users who have a BioNet Atlas account can alternatively choose to pass an API token for authentication. API tokens provide additional security for users and business systems.

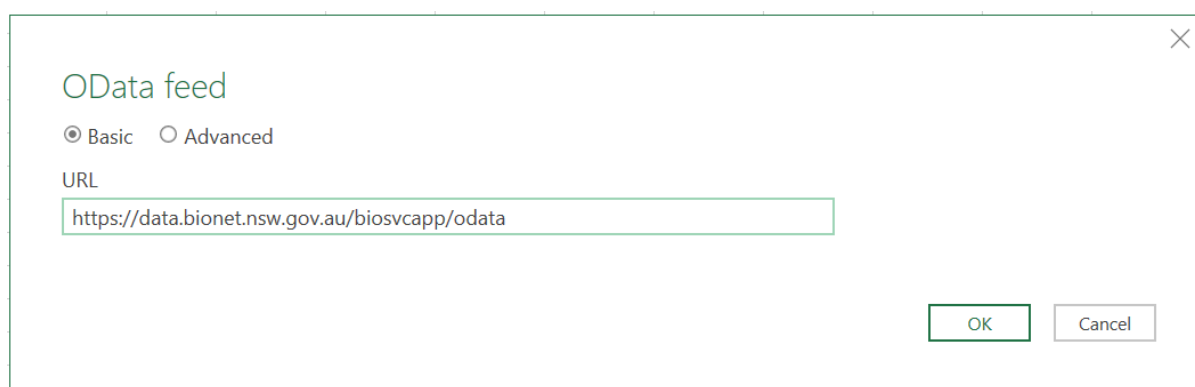
Step 1: Open the **Data** tab in Excel.



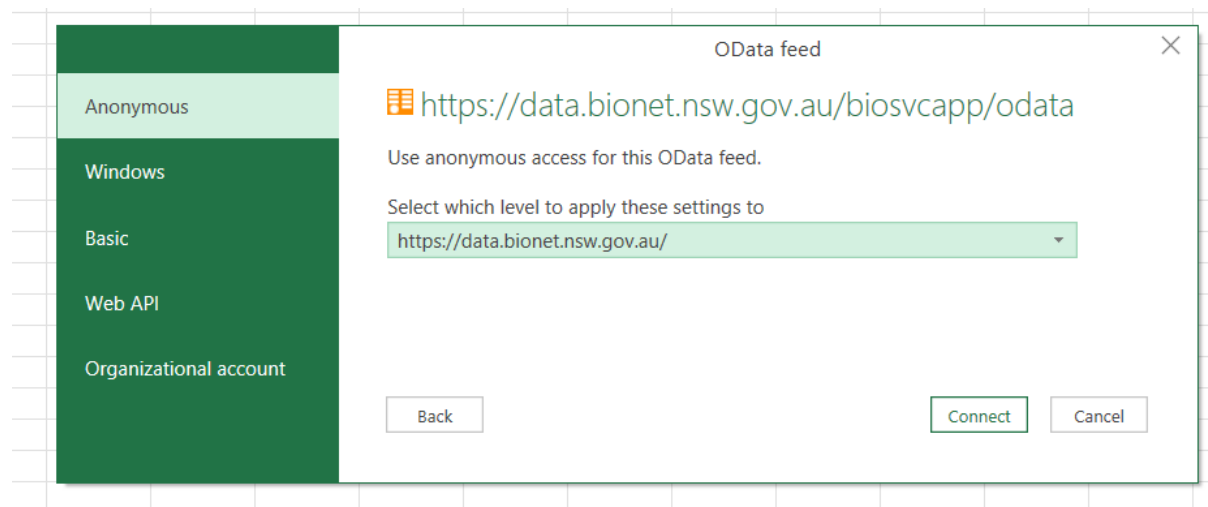
Step 2: In the 'Get Data' section of the Data ribbon, select 'From Other Sources' and click on 'From OData Feed'.



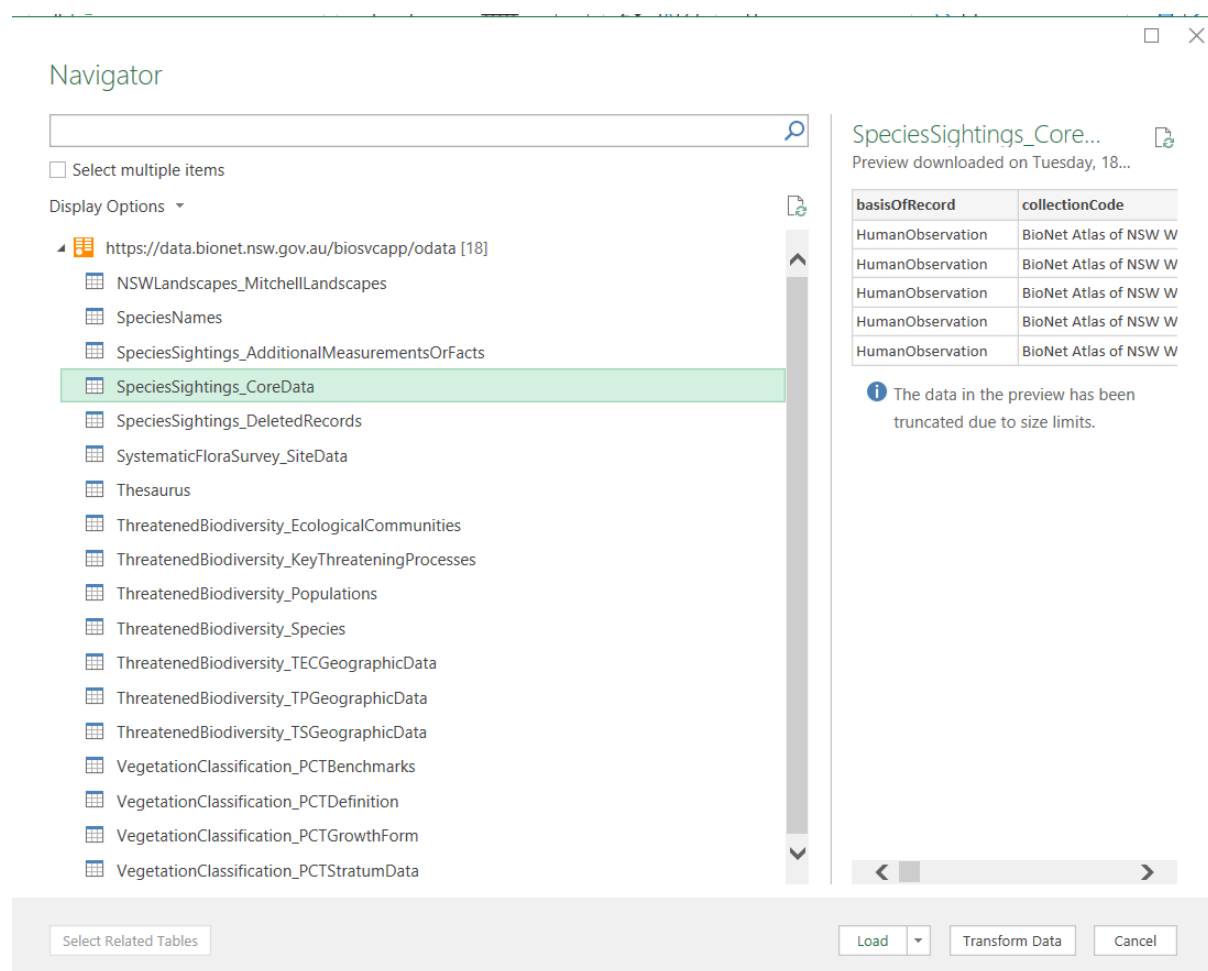
Step 3: In the OData Feed URL dialogue box enter <https://data.bionet.nsw.gov.au/biosvcapp/odata> and click 'OK'.



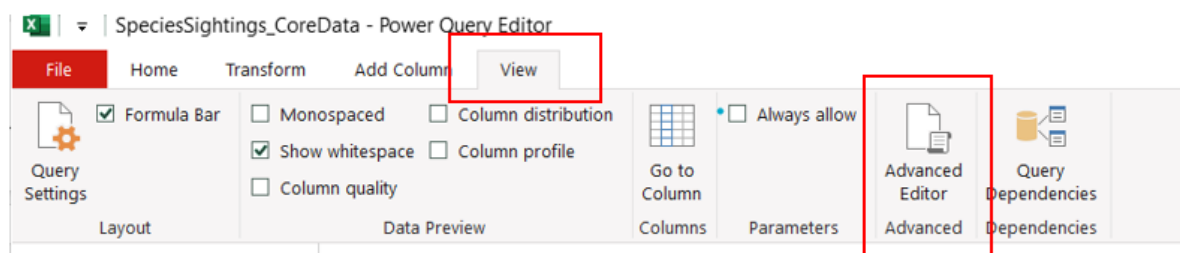
Step 4 The first time you connect to the service a window will appear asking how you would like to access the data. Select '**Anonymous**' and click '**Connect**'.



Step 5 Select the entity set (data table) that you want to access and click '**Transform Data**'.



Step 6 Prepare your code to integrate your API token into the Power Query Editor. The API token is passed directly in the code line. To access the code screen, select **View>Advanced Editor**.



The Advanced Editor screen will display.

SpeciesSightings_CoreData

```
let
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata", null, [Implementation="2.0"]),
    SpeciesSightings_CoreData_table = Source{[Name="SpeciesSightings_CoreData",Signature="table"]}[Data]
in
    SpeciesSightings_CoreData_table
```

Replace the line of code

```
Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata", null,
[Implementation="2.0"]],
```

with

```
accessToken = "Paste your API token here",
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata/", null,
[Headers = [{"access_token" = accessToken}, Implementation="2.0"]],
```

Step 7 Generate and retrieve your API token

Navigate to the [BioNet Atlas API token module](#) and log in by passing your BioNet Atlas credentials. Click '**Generate** API Token', then '**Copy API Token**'. You will paste this token when instructed in Step 8.

Note: This module can also be accessed from the User Profile pop-up within BioNet Atlas.



BioNet Data Warehouse : User settings

NSW Department of Climate Change, Energy, Environment and Water

Welcome, **JOHN**

Please log out of this module when you have completed your task

Log out

Username

bionetatlas_user@yopmail.com

Firstname

John

Surname

Smith

API Token

InQlpwZlh0G5wNw5Db0HitLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2fWfaEUmu91l5P/
OHOEAOnAxAsZPtXJfH+gj4zOVwDi0wVvHgVukCqXiNtO7jkfQU4Y7Se7xri

Generate API Token

Copy API Token

Token issued

17/04/2025

Note: The API token is unique to your user account. Do not share this token. If you generate a new token your old token will be automatically expired.

Step 8

Return to the Power Query Advanced Editor screen. Paste your API token between “Paste your API token here” being careful to not paste over the quotation marks.

```
accessToken = "Paste your API token here",
```

becomes

```
accessToken =  
"InQIpwZlh0G5wNw5Db0HltLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2  
fWfaEUmu91l5P/OHOEAOnAxAsZPtXJfH+gj4zOVwDi0wVvHgvukCqXiNtO7jkfQU4Y7Se  
7xri",
```

Your code should now resemble the below, but with your unique API token.

SpeciesSightings_CoreData

```
let  
    accessToken = "InQIpwZlh0G5wNw5Db0HltLRSP1kiaqfZfUfRkHSQDY=:T+IOUWqJQ10bWMxTfym16V2fWfaEUmu91l5P/OHOEAOnAxAsZPtXJfH+gj4zOVwDi0wVvHgvukCqXiNtO7jkfQU4Y7Se7xri",  
    Source = OData.Feed("https://data.bionet.nsw.gov.au/biosvcapp/odata/", null, [Headers = [{"access_token" = accessToken}, Implementation="2.0"]]),  
    SpeciesSightings_CoreData_table = Source{[Name="SpeciesSightings_CoreData", Signature="table"]}[Data]  
in  
    SpeciesSightings_CoreData_table
```

Select **Done** and you will be returned to the Query Builder screen. You can then begin to construct your query.

4. Building queries and extracting data

This guidance is intended to help get you started with a simple query. It is not exhaustive and serves to illustrate some important limitations and considerations in creating a query.



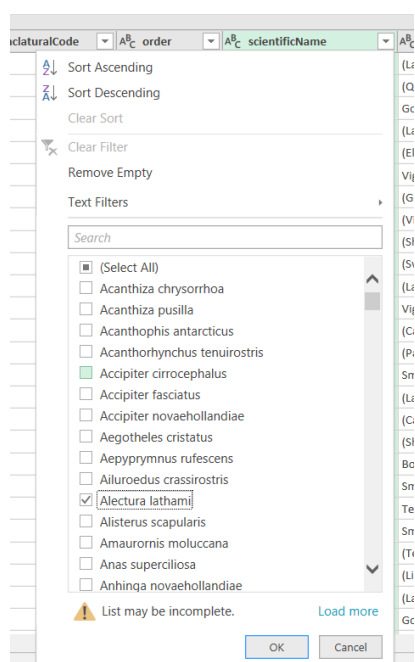
Keep your queries as simple as possible. Power Query allows very complex queries to be constructed, but when applied to large datasets performance can be an issue. The best approach is to apply one or 2 filters, select only the columns you want to retain, and download the data. Complete further data processing on your own machine.

4.1 Apply a filter



You must apply a filter to the columns to reduce the data you extract for some entity sets. If you do not apply a filter, Power Query will try to extract all records and may exceed the row limit in Excel.

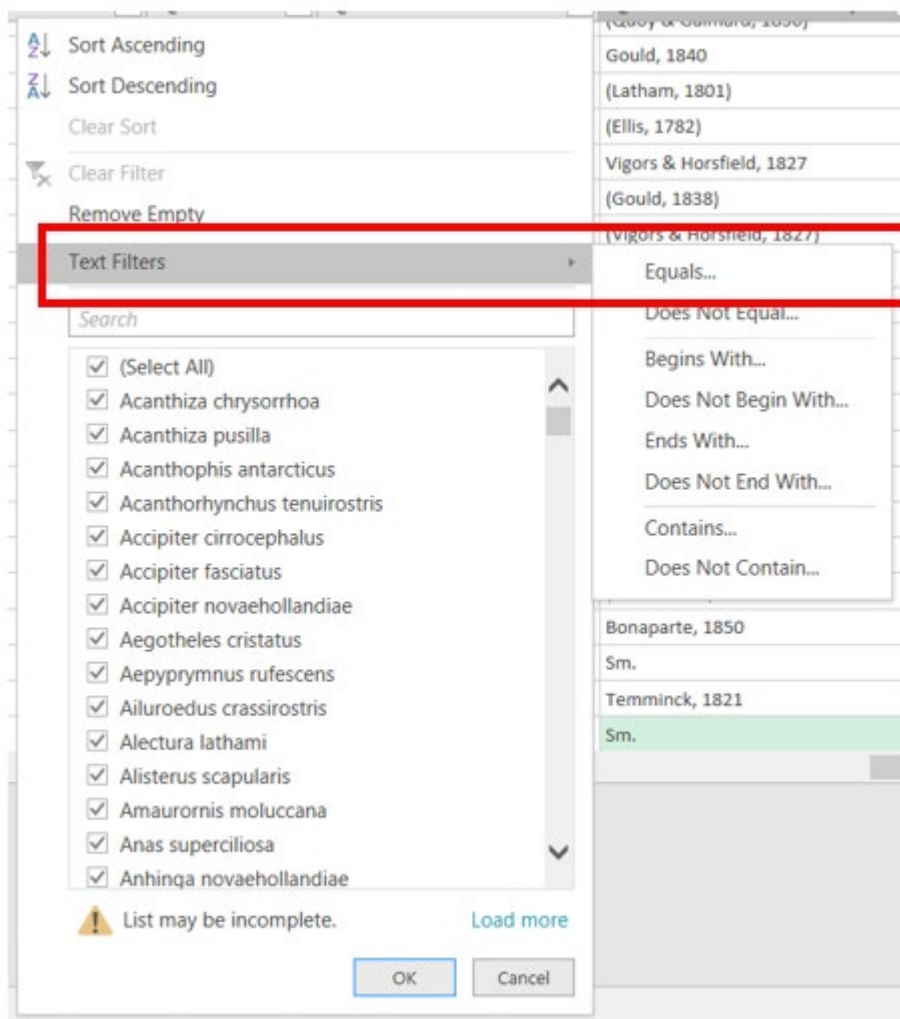
Step 1: Click on the header of the column you would like to apply your filter to. In many cases the filter item you are looking for will appear in the drop-down list. Select the item(s) you will filter on and click **'OK'**.





If what you are searching for does not appear in the filter list, do not click on Load more. This will try to download all records from BioNet to complete the list. Use the text filter (see screen shots below).

Step 2: If the item is not displayed in the drop-down menu by default, click on **‘Text Filters’** and use the **‘Equals’** option.



Using options other than ‘Equals’ may cause very long running queries and time-outs. Do not use the ‘Contains’ option as this type of search is not supported by the BioNet Web Service and the query may time out.

Step 3: In the dialogue box that appears, enter what you are searching for. You can include more than one item. Then click 'OK'.

✕

Filter Rows

Apply one or more filter conditions to the rows in this table.

☒ Basic ☐ Advanced

Keep rows where 'scientificName'

equals

Eulamprus leuraensis

☒ And ☐ Or

Enter or select a value

OK

Cancel

Step 4: The preview will then display up to the first 1,000 records matching your query. Note that in the Query Editor you may not see all records if they exceed 1,000.

SpeciesSightings_CoreData - Power Query Editor
✕

File

Home

Transform

Add Column

View

Close & Load
Refresh
Advanced Editor

Choose Columns
Remove Columns
Keep Rows
Remove Rows

Split Column
Group By
Use First Row as Headers
Replace Values

Merge Queries
Append Queries
Combine Files

Manage Parameters
Data source settings
New Source

Recent Sources
Enter Data

Queries [1]
fx

= Table.SelectRows(SpeciesSightings_CoreData_table, each [scientificName] = "Eulamprus leuraensis")

	APC_nomenclaturalCode	APC_order	APC_scientificName	APC_scientificNameAuthorship	APC_scientificName
1	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
2	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
3	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
4	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
5	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
6	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
7	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
8	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
9	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
10	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
11	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
12	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
13	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
14	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
15	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
16	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
17	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
18	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
19	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
20	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
21	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
22	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
23	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
24	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215
25	ICZN	Squamata	Eulamprus leuraensis	Jells & Wellington, 1984	2215

95 COLUMNS, 199+ ROWS
Column profiling based on top 1000 rows

Query Settings
✕

PROPERTIES

Name

SpeciesSightings_CoreData

APPLIED STEPS

Source

Navigation

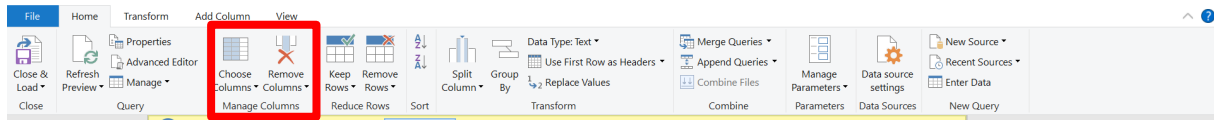
Filtered Rows

PREVIEW DOWNLOADED ON WEDNESDAY

4.2 Reduce the number of columns returned

Selecting only the columns of data you are interested in makes the download quicker and more efficient. This is not a mandatory step.

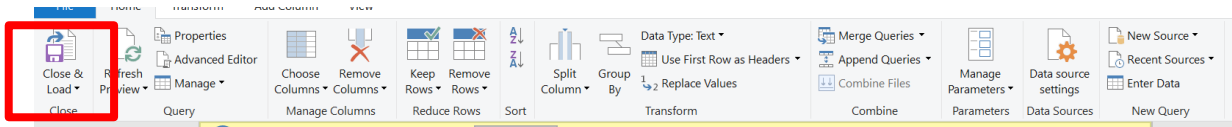
Step 1: Click on the ‘**Choose Columns**’ button.



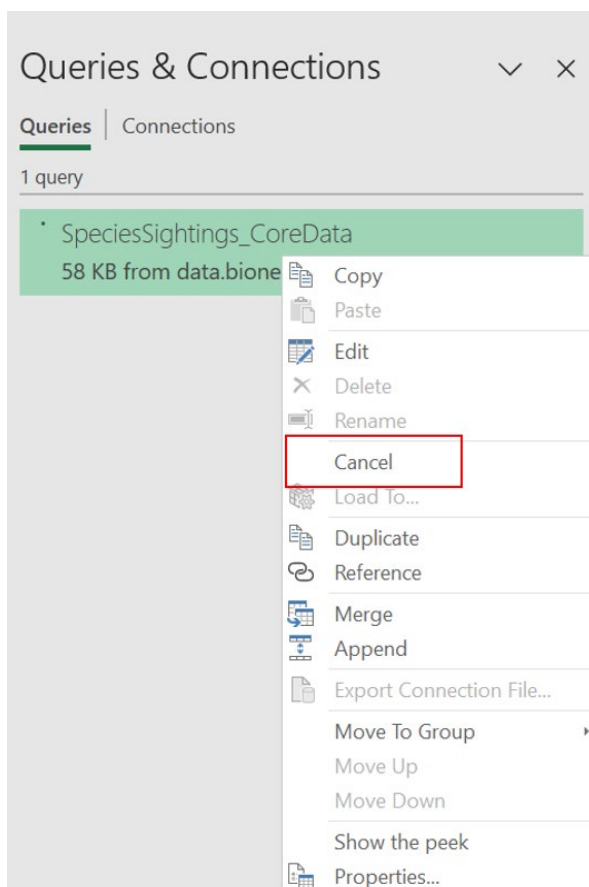
Step 2: Choose your columns from the **Choose columns** window and click ‘**OK**’.

4.3 Extract the data to the Excel spreadsheet

Step 1: Click on the ‘**Close & Load**’ button to load your data to your spreadsheet.

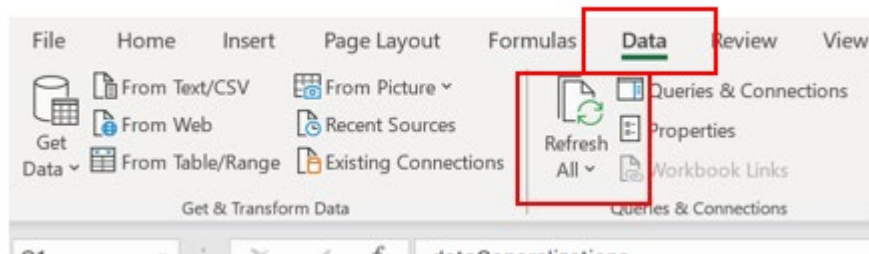


Step 2: You will be returned to the spreadsheet table. Your data will now commence loading. Note, in the Workbook Queries side bar you will see the query executing and should see the number of rows increasing until it is finished. If you would like to stop it, right click on the query and select ‘**Cancel**’.



4.4 How to refresh your extracted data

When you save your workbook, the queries that you have created will be saved with it. The next time you open the workbook you can refresh your queries to extract the most up to date data from the Data ribbon by clicking 'Refresh All'.



For further information: [Contact the BioNet team.](#)